CLAIMS

What is claimed is:

1. A method of forming a fingerprint-resistant anti-reflection coating for application onto a plastic substrate, comprising the steps of:

a) ion beam depositing a lower thin layer onto a plastic substrate, said lower layer having an optical path length equal to a half wave at a pre-selected design wavelength in the range of about 450 to 500 nanometers; and

b) ion beam depositing an upper thin film layer onto said lower thin film layer, an upper surface of said upper thin film layer to be exposed to an ambient environment, said lower layer having an indeix of refraction greater than an index of refraction of said upper layer, said index of refraction of the lower layer being at least 0.5 higher than the index of refraction of the upper layer, said upper layer having an optical path length equal to a quarter wave at a pre-selected design wavelength in the range of about 450 to 550 nanometers.

2. The method of Claim 1, wherein said step of depositing an upper layer comprises depositing an upper layer comprising SiO_2.

3. The method of Claim 1, wherein said step of depositing an upper layer comprises depositing an upper layer comprising Al_2O_3.

4. The method of Claim 1, wherein said step of depositing a lower layer comprises depositing a lower layer comprising TiO_2.

5. The method of Claim 1, wherein said pre-selected design wavelength is 500 nanometers.

6. The method of Claim 1, wherein the index of refraction for the plastic substrate is 1.52 and the index of refraction for the lower layer is 2.7.

7. The method of Claim 1, wherein the index of refraction of the ambient environment is 1.0 and the index of refraction of said upper layer is 1.5.

8. The method of Claim 1, wherein said upper layer is SiO_2, the lower layer is TiO_2 and the design wavelength is 500 nanometers.

9. The method of Claim 1, wherein said upper layer is Al_2O_3, the lower layer is TiO_2 and the design wavelength is 500 nanometers.

10. A method of forming a fingerprint-resistant anti-reflection coating for plastic eyeglass lenses, comprising:

selecting a design wavelength;

ion depositing an upper thin film layer to be exposed to an ambient environment, said upper layer having an optical path length substantially equal to about a quarter wave at the selected design wavelength; and

ion depositing a lower thin film layer to interface the plastic eyeglass lenses, said lower layer having an index of refraction greater than an index of refraction of the upper layer, said index of refraction of the lower layer being at least about 0.5 higher than the index of refraction of the upper layer, said lower layer having an optical path length equal to a half wave at the selected design wavelength;

wherein the reflectance of light from said fingerprint-resistant anti-reflection coating when applied to plastic eyeglass lenses is substantially the same in oil and the ambient environment.

11. The method of Claim 10, wherein ion depositing the upper layer includes depositing SiO_2.

12. The method of Claim 10, wherein ion depositing the upper layer comprises depositing Al_2O_3.

13. The method of Claim 10, wherein ion depositing the upper layer comprises depositing TiO_2.

14. The method of Claim 10, wherein selecting the design wavelength includes selecting a wavelength of about 450 to about 550 nanometers.

15. A method of forming a fingerprint-resistant anti-reflection structure, comprising:

a) selecting a polymer substrate;

b) ion depositing a lower thin film layer to interface the selected polymer substrate, the lower layer having an index of refraction greater than an index of refraction of the upper layer, the index of refraction of the lower layer being at least 0.5 higher than the index of refraction of the upper layer, the lower layer having an optical path length equal to about a half wave at the pre-selected design wavelength of about 450 to about 550 nanometers; and

c) ion depositing an upper thin film layer, to be exposed to an ambient environment, having an optical path length equal to about a quarter wave at a pre-selected design wavelength of about 450 to about 550 nanometers.

16. The method of Claim 15, wherein ion depositing the upper layer includes depositing at least one of SiO_2, Al_2O_3, and combinations thereof.

17. The method of Claim 15, wherein ion depositing the lower layer includes depositing TiO_2.

18. The method of Claim 15, wherein the pre-selected design wavelength is about 500 nanometers.

19. The method of Claim 15, wherein the index of refraction for the plastic substrate is about 1.52 and the index of refraction for the lower layer is about 2.7.

20. The method of Claim 15, wherein the index of refraction of the ambient environment is about 1.0 and the index of refraction of the upper layer is about 1.5.

21. The method of Claim 15, wherein ion depositing the upper layer includes depositing SiO_2, ion depositing the lower layer includes depositing TiO_2, and the preselected design wavelength is about 500 nanometers.

22. The method of Claim 15, wherein ion depositing the upper layer includes depositing Al_2O_3, ion depositing the lower layer includes depositing TiO_2, and the preselected design wavelength is about 500 nanometers.